

SEP 23 2009

Appl. No 10/587,850 Amdt. dated Sept, 19 2009

Reply to Office Action June 24, 2009

Remarks / Arguments

We are very thankful for your careful screening of our application and the detailed action. We hope to have rendered the application now in a grantable form.

We have replaced the generic claim 30, added with our last attempt for amendment, by the newly added claim 31. We are convinced that this new generic claim 31 is, in contrast to the now cancelled 30, fully covered by the description of the original application; we understand that the mathematical description used in the -now cancelled- claim 30 could be considered to be new matter, even without changing the scope of the invention itself, because it is not part of the description.

We think that our new generic claim 31 achieves to fulfill all requirements, and eliminates the problems of detailed actions 6,19 of the OA.

We hope that the scope of the invention is now clearly formulated by the new generic claim 31. To summarize, we achieve, solely by a clever arrangement of three polarizing layers, a system of polarizers that treats both sub-beams of a polarization beam splitting process or a polarizing beam combining process the very same way, resulting with the same polarization contrast and intensity (in the splitting process) for both sub-beams. Furthermore, both beams are geometrically transformed in a matchable way (both are folded once), which can be rather important especially in the combining process, e.g. for a modulated beam. This is what we call a three-armed cross-polarizer.

This three-arm system is the core of even more complex polarizer systems, where a fourth polarizing layer is added, to result in the almost unbelievable function of four three-armed polarizers (P1-P2-P3 + P2-P1-P4 + P4-P3-P2 + P3-P4-P1). This four-armed polarizer is a great improvement compared to earlier designs with 4 polarizers, which have the vectors of their polarizers parallel.

All formal mistakes and problems enumerated by your OA have been corrected.

Appl. No 10/587,850 Amdt. dated Sept, 19 2009

Reply to Office Action June 24, 2009

Due to a large number of grammatical and also spelling mistakes (action: 11, 12) I decided to replace the description with the one included above.

One new paragraph was added in the state of the art section. Paragraph [0008] now treats the paper by Fulkerson et al., (your statement: 21). We understand that this paragraph, as an addition to the description of the state of the art, is not to be considered new matter, but had been required by your OA.

Otherwise, the changes in the description are idiomatic, language and spelling corrections, and the addition of paragraph numbering.

We have also tried to explain why we used the word "complementary" for the action of the polarizing layers coupled in our invention. Furthermore, I understand that the choice of the word "reciprocal" to denote a reversed sequence of polarizations was not a very fortunate one. We have therefore eliminated this word from the generic claim. Again, our choice of the word "symmetrical" to indicate that both sub-beams undergo a transmission and a reflection is critical because of the reversed sequence. We have now, after some consideration, and after the intense use of dictionaries as well as in accordance with several discussions with native- American-English speakers, used the word "congeneric" in the abstract, because the intensity and polarization contrast are derived from the same processes on both sub-beams.

The abstract, which was filled with the rather misleading "symmetrical" and "reciprocal" wording, and which was almost literally translated from the German version, was rewritten (action 10 all points included).

A few descriptions of the figures were rewritten.

We have provided 4 corrected figures: (detailed action 6,7,8,9)

Fig.1A ,1B now state "prior art" (action 8) and we added Fig.1C to cover the work of Fulkerson et al. (action 21)

Fig.5. We have removed a circle line (ground plane, formerly without descriptor).

Appl. No 10/587,850 Amdt. dated Sept, 19 2009

Reply to Office Action June 24, 2009

Fig.6. We replaced the decimal separator "," by the US"." (action 7.)

Fig.7. Like in Fig.5, we removed a circle (ground plane, formerly without denominator.).

According to the changes in Figs 5 and 7, the term "common ground plane" was completely removed from all claims.

You have suggested that a correlation of figures and claims might be rather helpful (action 9).

The following table should help to clarify this allocation: (figures in parentheses are not directly correlated to a specific claim)

Appl. No 10/587,850 Amdt. dated Sept, 19 2009

Reply to Office Action June 24, 2009

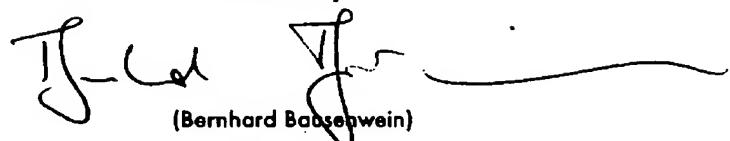
FIG	Claim
(1A, 1B, 1C)	(prior art)
(2A, 2B)	(specification of the polarizing layer vector, a "new" designator)
3	31 (new generic claim)
(4A, 4B)	(explanation of a beam splitting subsystem used in the invention)
5A	2,13
5B	3,4
(6A-6E)	(derivation of the polarization contrast in the invention)
7A	7
7B	8
8A,8B	16,17
9	9,10 (withdrawn)
10	14, 16, 17
11	18
12	9,10 (withdrawn)
13A	21
13B	5
13C	22
13D,13H	32
13E	6,33
13F	23
13G	24,34
13H, 13I	25
14A	15
14B	20

Appl. No 10/587,850 Amdt. dated Sept, 19 2009

Reply to Office Action June 24, 2009

Respectfully submitted,

sincerely,



(Bernhard Bausenwein)

Tel: ++49 9453 996822

email bb@opti-project.de

Page 50 of 50